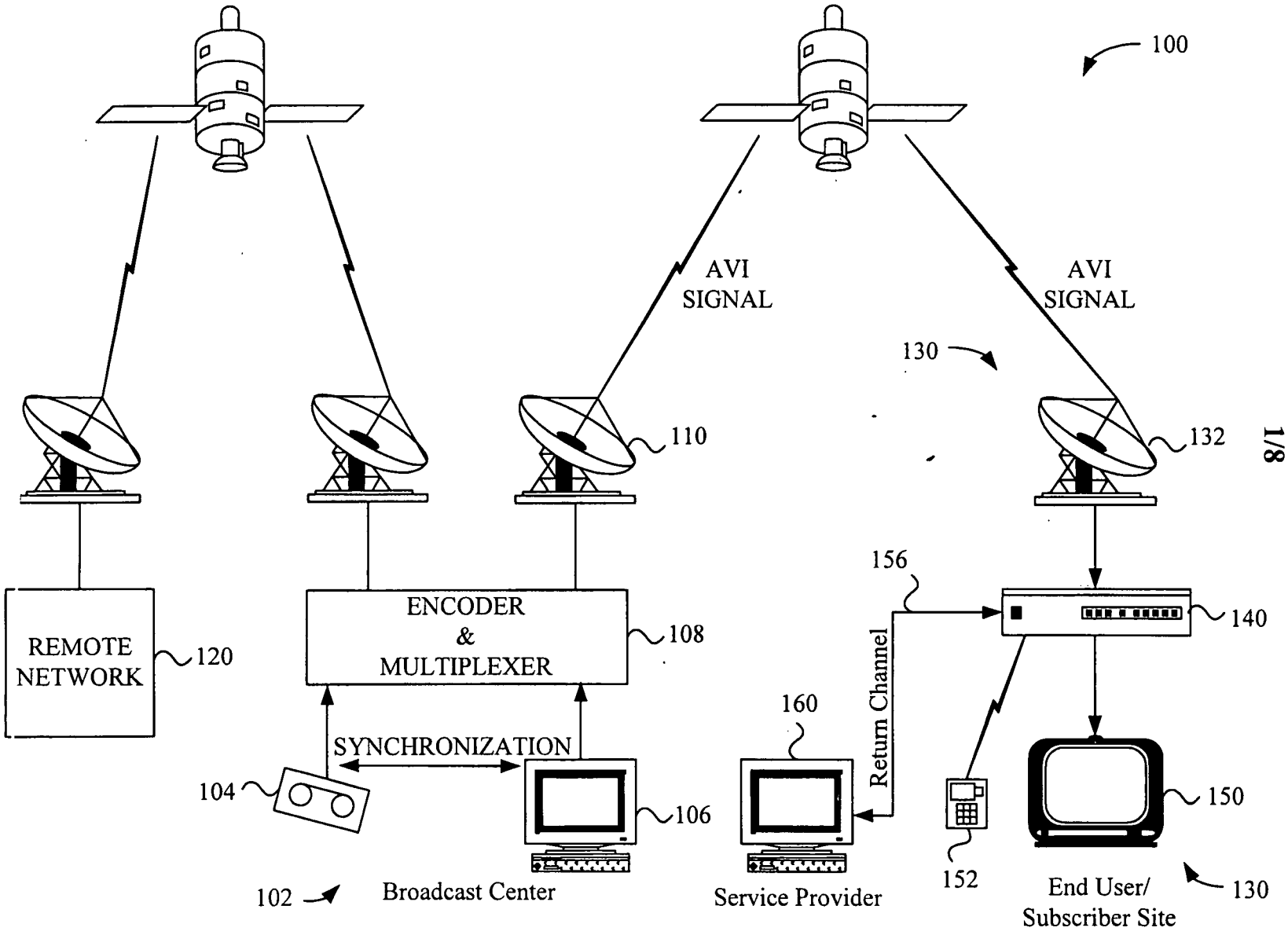
100
AVI SIGNAL
AVI SIGNAL
130
110
132
REMOTE NETWORK
120
ENCODER & MULTIPLEXER
108
156
140
160
Return Channel
SYNCHRONIZATION
104
106
150
152
102
Broadcast Center
Service Provider
End User/ Subscriber Site
130

FIG. 1

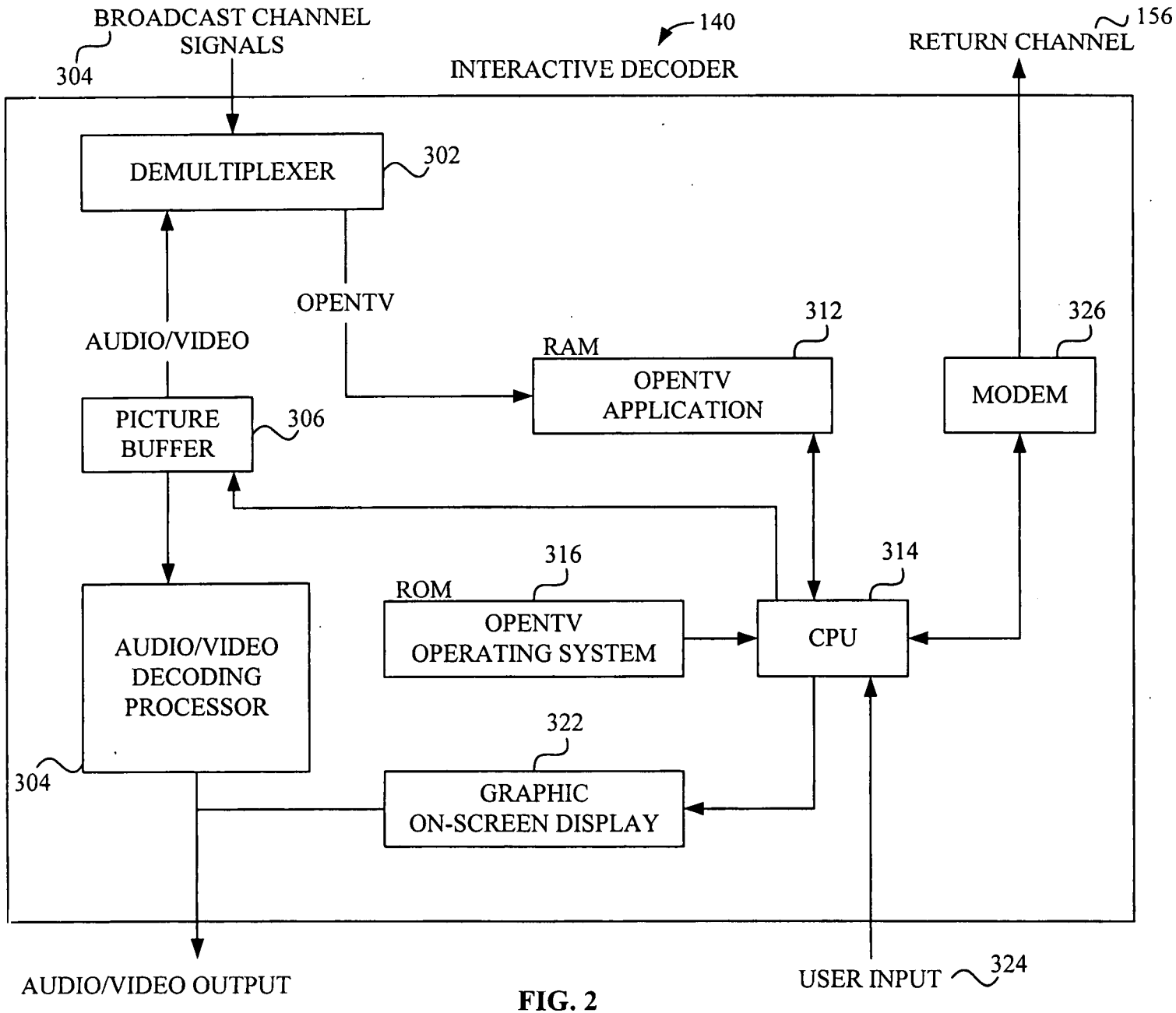
BROADCAST CHANNEL SIGNALS
304
140
INTERACTIVE DECODER
156
RETURN CHANNEL
DEMULTIPLEXER
302
OPENTV
AUDIO/VIDEO
312
RAM
OPENTV APPLICATION
326
MODEM
PICTURE BUFFER
306
316
ROM
OPENTV OPERATING SYSTEM
314
CPU
AUDIO/VIDEO DECODING PROCESSOR
304
322
GRAPHIC ON-SCREEN DISPLAY
AUDIO/VIDEO OUTPUT
USER INPUT
324

FIG. 2

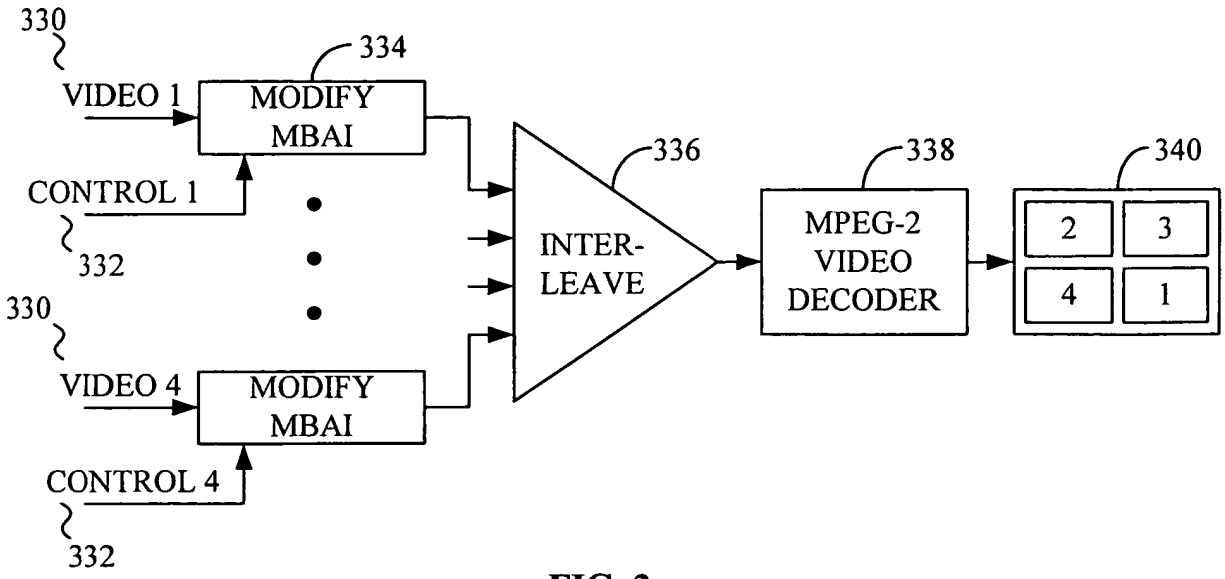

FIG. 3

MBAI VLC	INCREMENT VALUE	MBAI VLC	INCREMENT VALUE
1	1	0000 0101 01	18
011	2	0000 0101 00	19
010	3	0000 0100 11	20
0011	4	0000 0100 10	21
0010	5	0000 0100 011	22
0001 1	6	0000 0100 010	23
0001 0	7	0000 0100 001	24
0000 111	8	0000 0100 000	25
0000 110	9	0000 0011 111	26
0000 1011	10	0000 0011 110	27
0000 1010	11	0000 0011 101	28
0000 1001	12	0000 0011 100	29
0000 1000	13	0000 0011 011	30
0000 0111	14	0000 0011 010	31
0000 0110	15	0000 0011 001	32
0000 0101 11	16	0000 0011 000	33
0000 0101 10	17	0000 0001 000	MB ESCAPE

FIG. 6

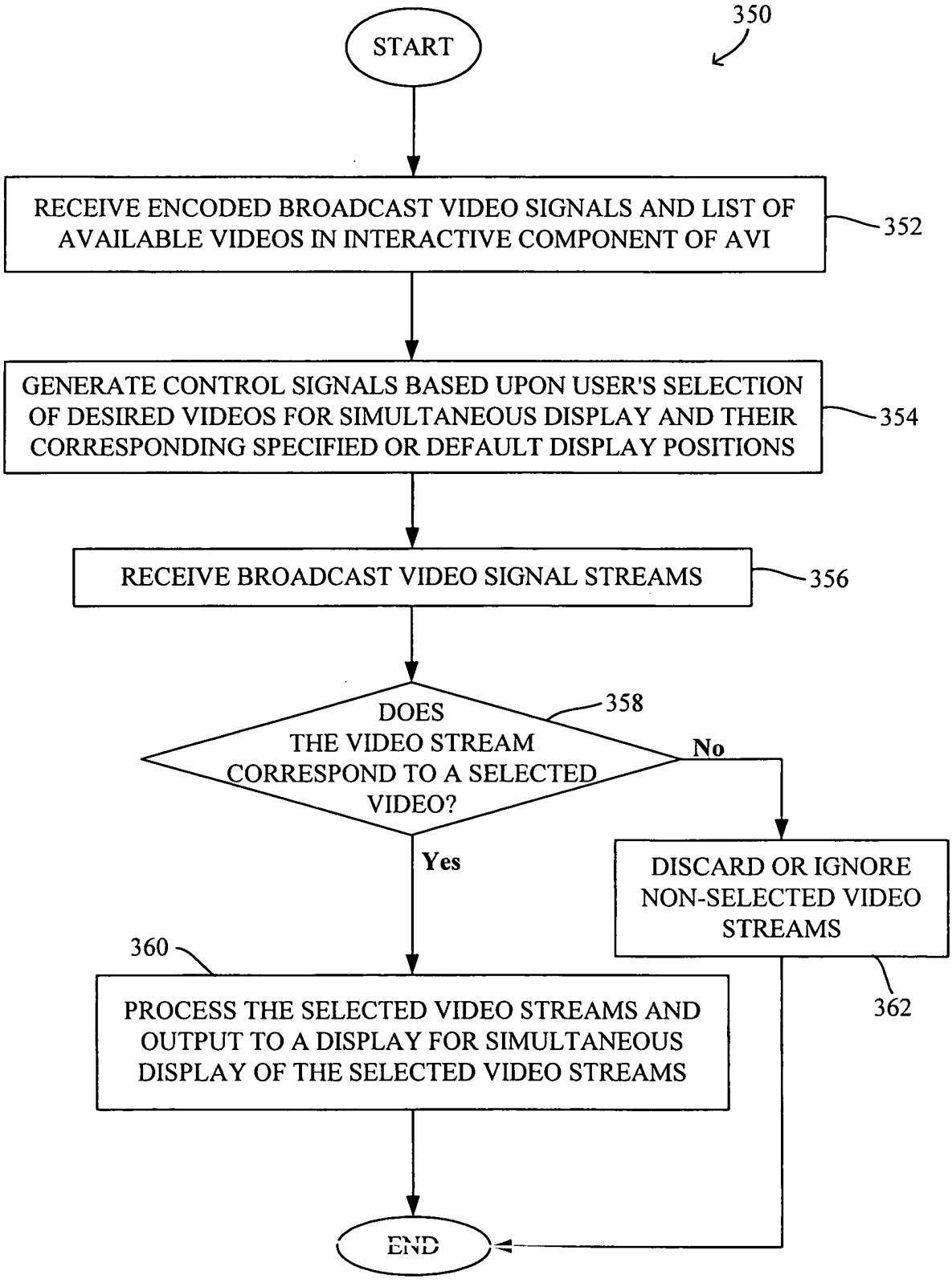
350
START
RECEIVE ENCODED BROADCAST VIDEO SIGNALS AND LIST OF AVAILABLE VIDEOS IN INTERACTIVE COMPONENT OF AVI
352
GENERATE CONTROL SIGNALS BASED UPON USER'S SELECTION OF DESIRED VIDEOS FOR SIMULTANEOUS DISPLAY AND THEIR CORRESPONDING SPECIFIED OR DEFAULT DISPLAY POSITIONS
354
RECEIVE BROADCAST VIDEO SIGNAL STREAMS
356
DOES THE VIDEO STREAM CORRESPOND TO A SELECTED VIDEO?
358
No
Yes
DISCARD OR IGNORE NON-SELECTED VIDEO STREAMS
362
360
PROCESS THE SELECTED VIDEO STREAMS AND OUTPUT TO A DISPLAY FOR SIMULTANEOUS DISPLAY OF THE SELECTED VIDEO STREAMS
END

FIG. 4A

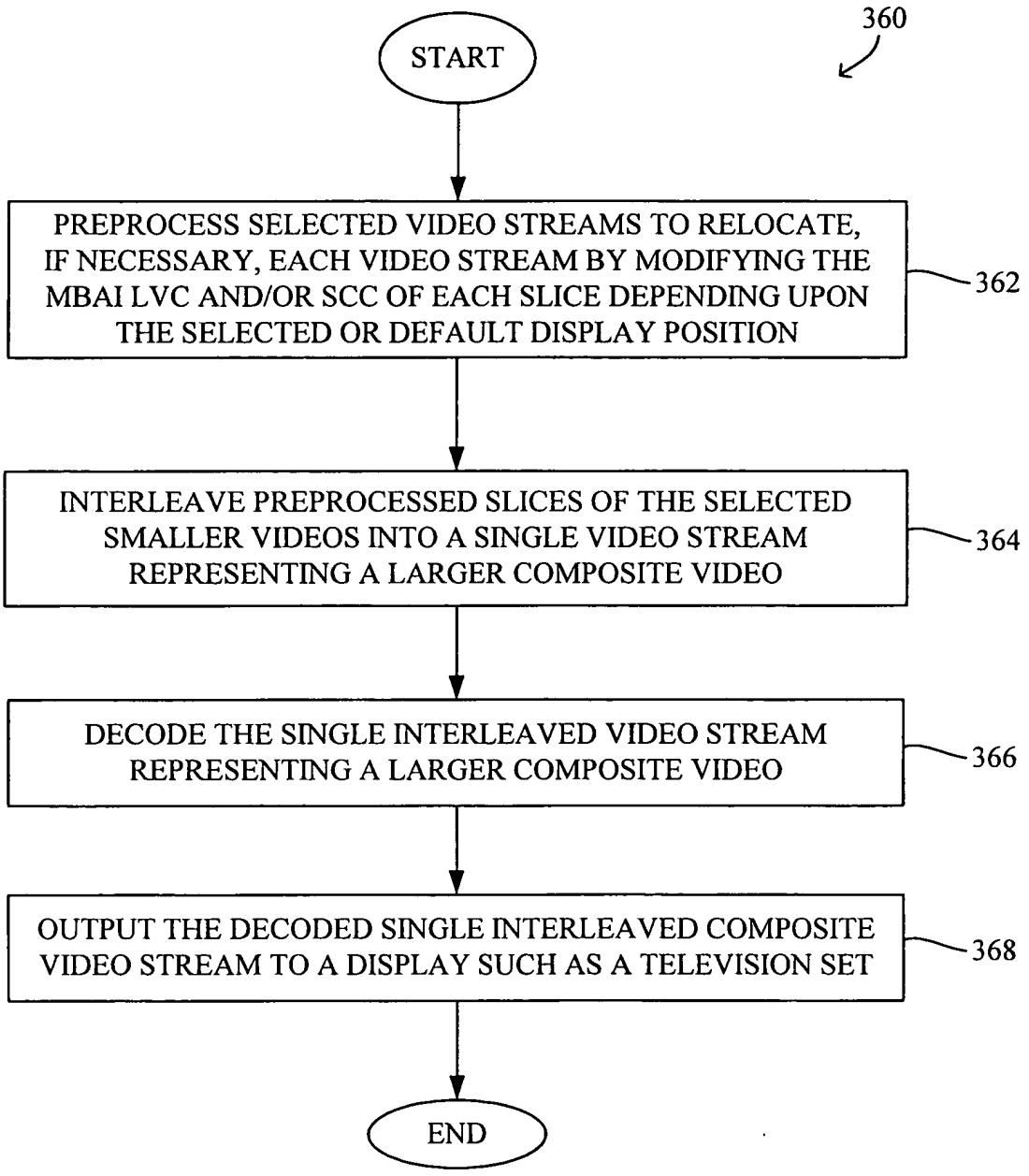
360
START
PREPROCESS SELECTED VIDEO STREAMS TO RELOCATE, IF NECESSARY, EACH VIDEO STREAM BY MODIFYING THE MBAI LVC AND/OR SCC OF EACH SLICE DEPENDING UPON THE SELECTED OR DEFAULT DISPLAY POSITION
362
INTERLEAVE PREPROCESSED SLICES OF THE SELECTED SMALLER VIDEOS INTO A SINGLE VIDEO STREAM REPRESENTING A LARGER COMPOSITE VIDEO
364
DECODE THE SINGLE INTERLEAVED VIDEO STREAM REPRESENTING A LARGER COMPOSITE VIDEO
366
OUTPUT THE DECODED SINGLE INTERLEAVED COMPOSITE VIDEO STREAM TO A DISPLAY SUCH AS A TELEVISION SET
368
END

FIG. 4B

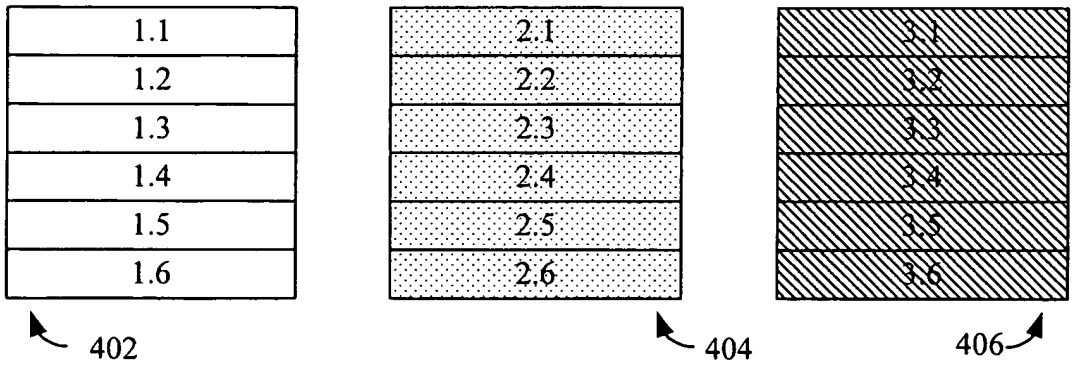

FIG. 5A

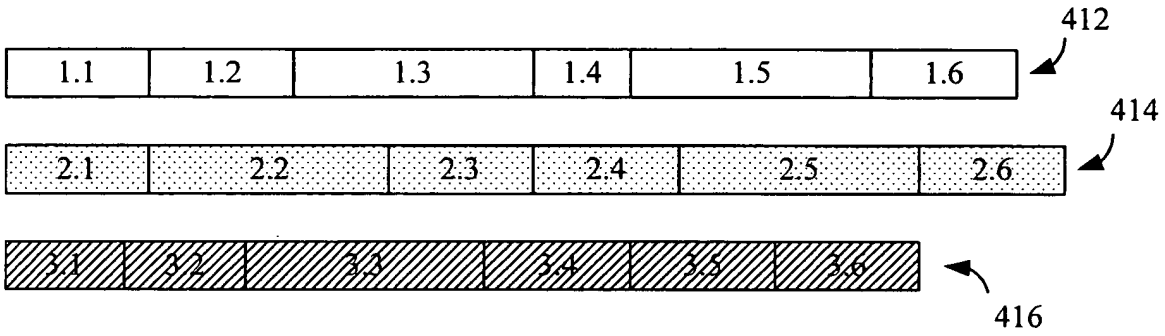

FIG. 5B

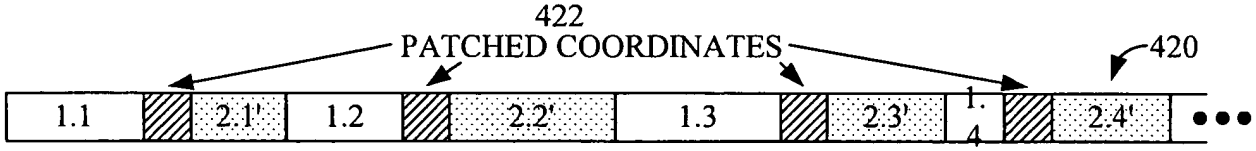

FIG. 5C

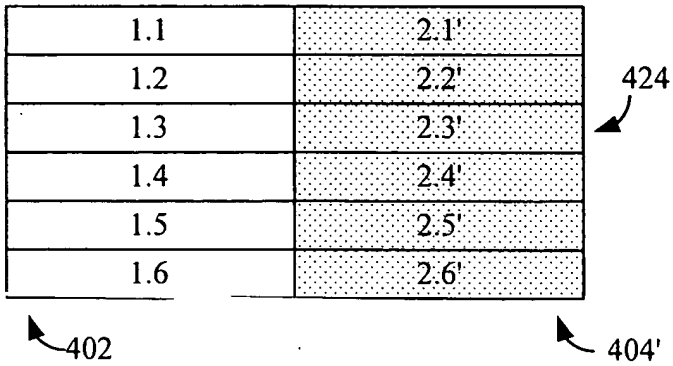

FIG. 5D

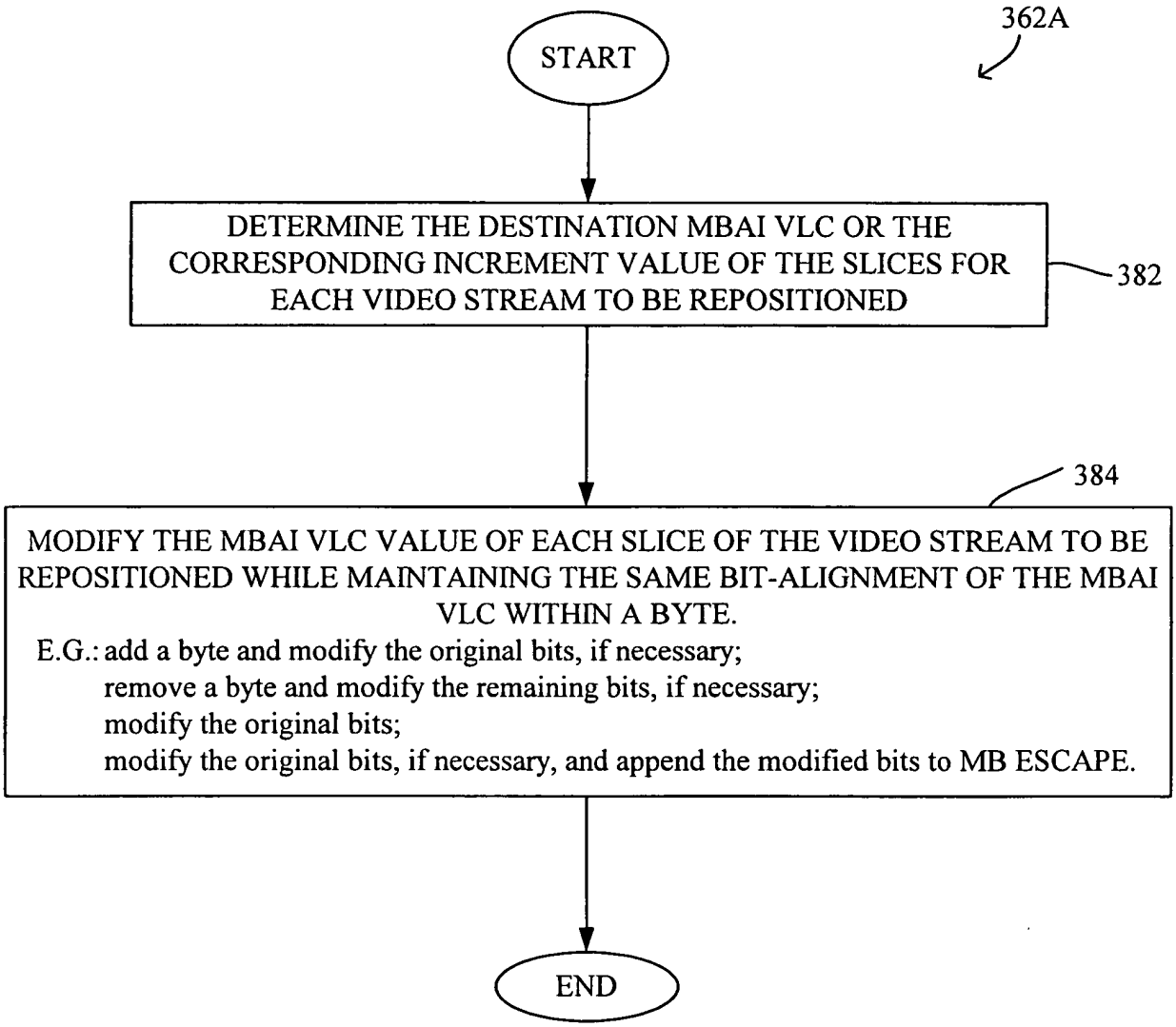
362A
START
DETERMINE THE DESTINATION MBAI VLC OR THE CORRESPONDING INCREMENT VALUE OF THE SLICES FOR EACH VIDEO STREAM TO BE REPOSITIONED
382
384
MODIFY THE MBAI VLC VALUE OF EACH SLICE OF THE VIDEO STREAM TO BE REPOSITIONED WHILE MAINTAINING THE SAME BIT-ALIGNMENT OF THE MBAI VLC WITHIN A BYTE.
E.G.: add a byte and modify the original bits, if necessary;
remove a byte and modify the remaining bits, if necessary;
modify the original bits;
modify the original bits, if necessary, and append the modified bits to MB ESCAPE.
END

FIG. 7

Number of MBAI_stuffing codes	Number of Bits in the MBAI_stuffing code(s)	Number of Bits Modulo 8
0	0	0
1	11	3
2	22	6
3	33	1
4	44	4
5	55	7
6	66	2
7	77	5

FIG. 8

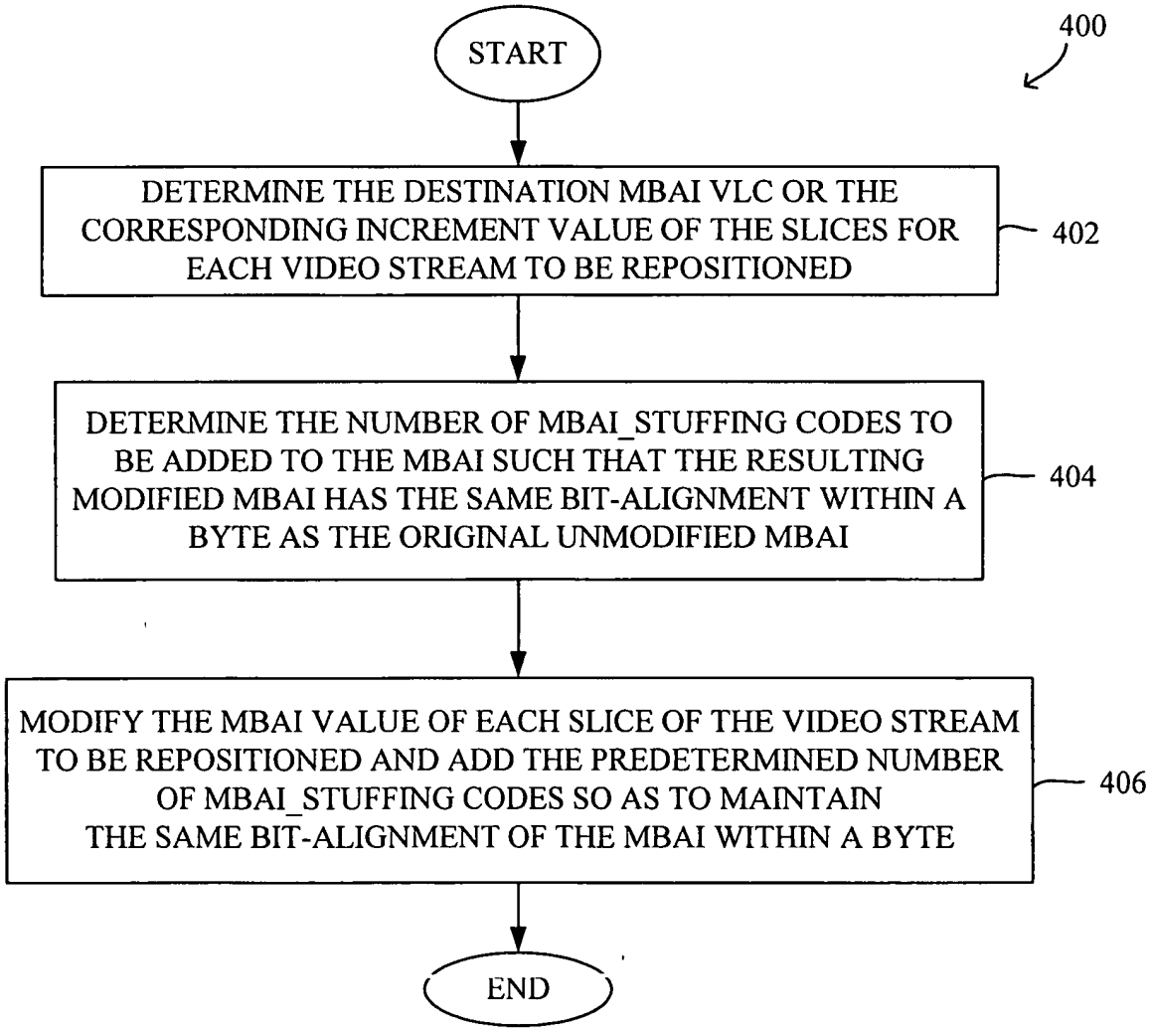

FIG. 9